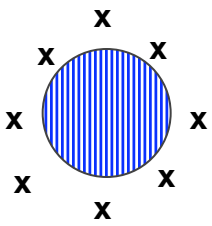
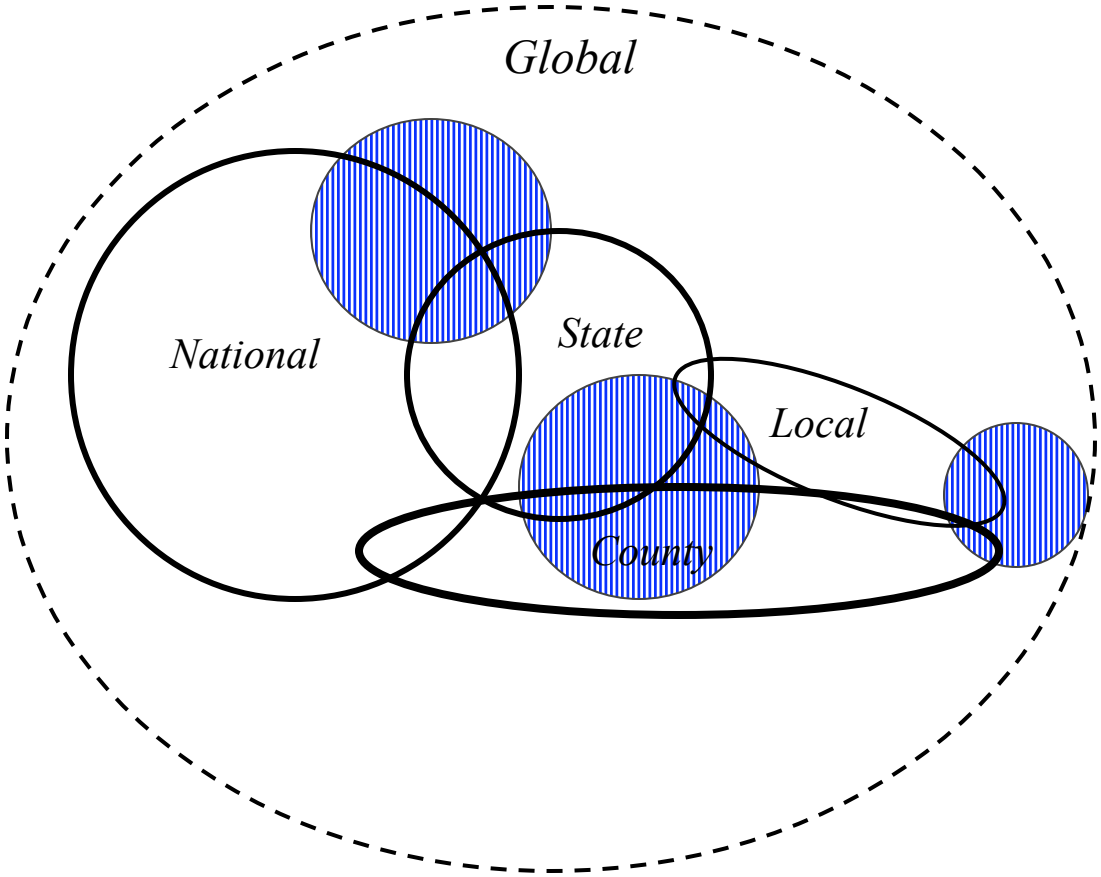
Region of Interest

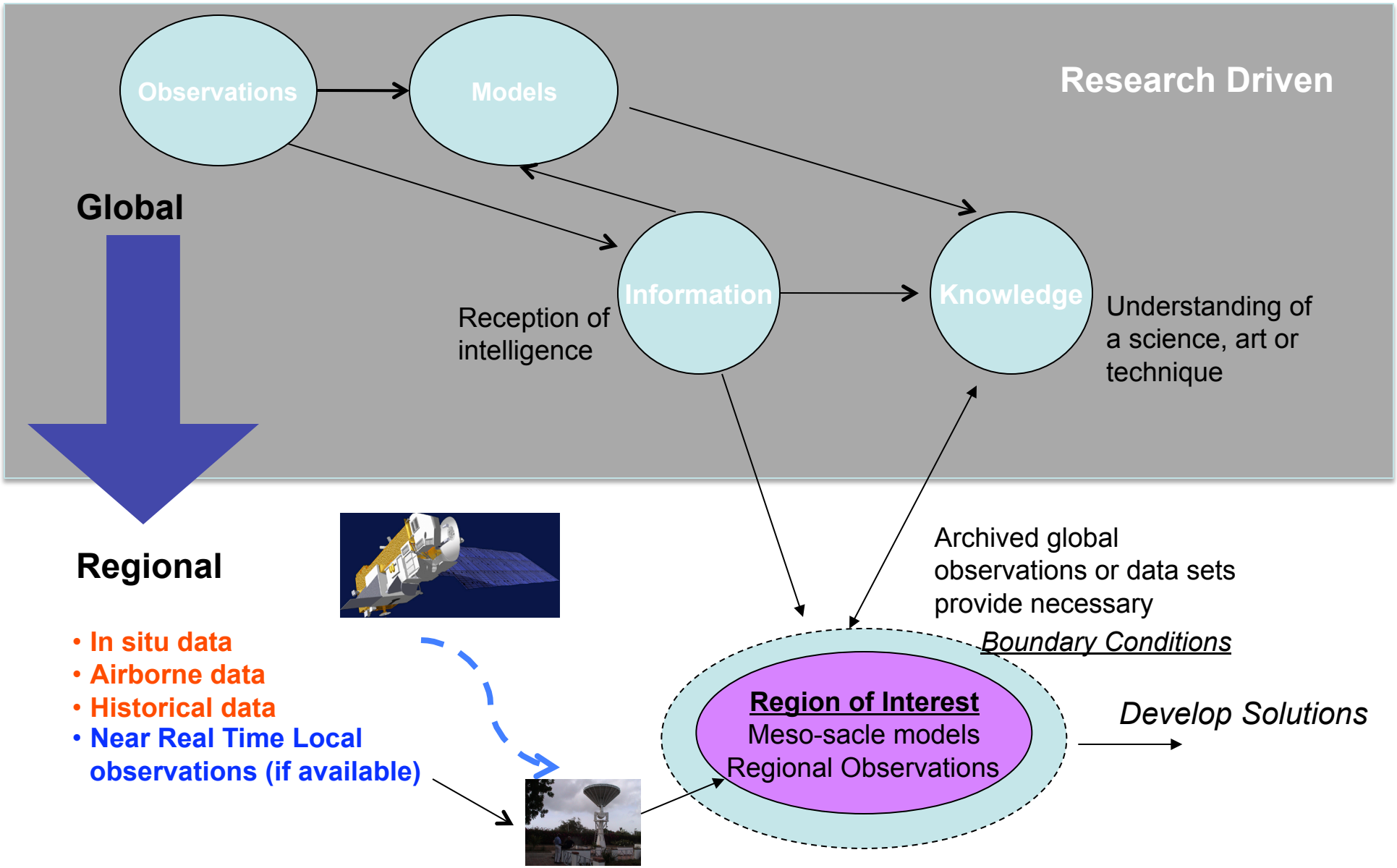
Global measurements and products provide necessary boundary conditions (x) to address zonal problems



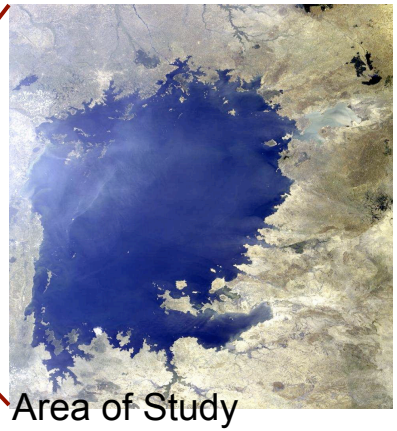
Region



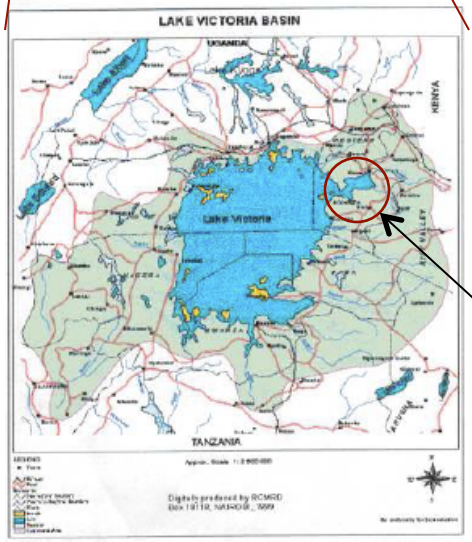
Problem Solving & Capacity Building



Lake Victoria Basin



Area of Study
(using satellite precipitation observation with 0.25^{o} resolution ~ 25km)



Country	Lake Surface Area sq km	%	Shoreline km	% of shoreline	Catchment Area Sq. km	% of Catchment Area
Kenya	4,113	6	550	17	38,913	22
Uganda	31,001	45	1,750	50	28,857	16
Tanzania	33,756	49	1,150	33	79,570	44
Rwanda	0	0	0	0	20,550	11
Burundi	0	0	0	0	13,060	7
Total	**68,870**	**100**	**3,450**	**100**	**180,950**	**100**

Nzoia Basin (Area of Study with high resolution model ~ 1km)

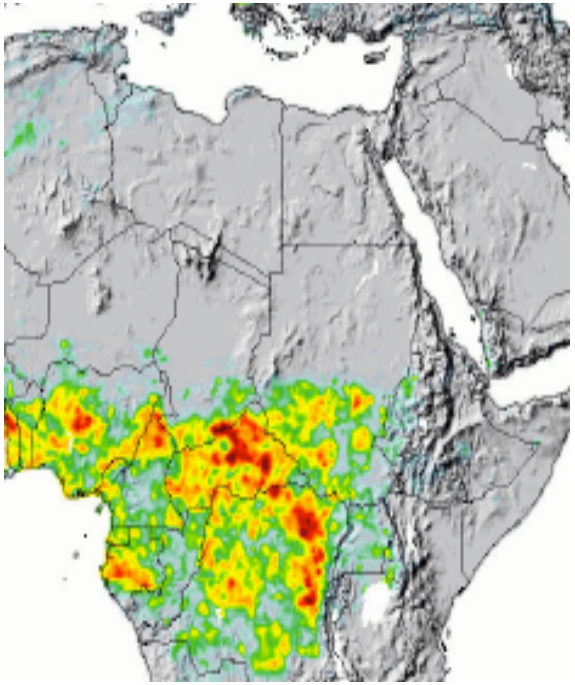
Factual data

- Lake Victoria is the second largest fresh water lake in the Eastern part of Africa
  - A vital natural resource for the economic well being and prosperity of over 30 million people located in riparian regions of Uganda, Kenya and Tanzania.
  - It covers a large area of about 68,870 km^2 and produces a GDP of about US $30 billion per year.
  - The region is also very much prone to natural disasters such as severe floods during heavy precipitation periods in the Eastern part of Africa.

Ref: RCMRD data	**Kenya 200-6**	**E. Africa 2006**
Property Loss ($US)	250 Million	400 Million
Displaced Persons	300,000	850,000
People needing emergency relief service	250,000	700,000
Deaths	260	1000

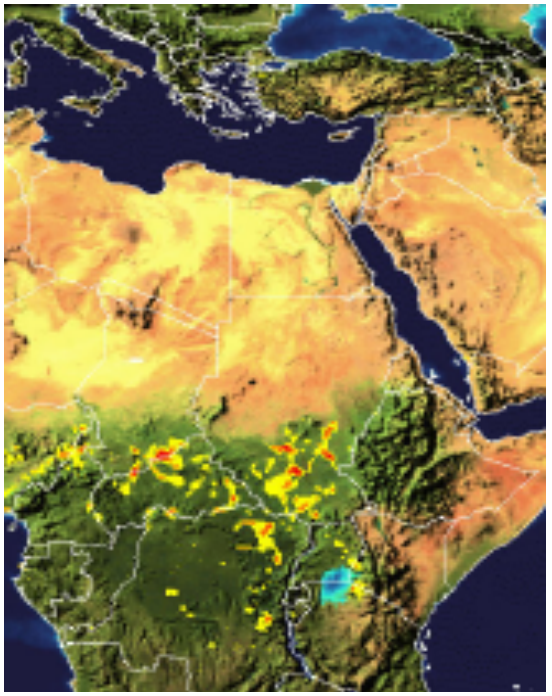
Flood Potential & Forecast Mapping

- Using a regional/global hydrologic model with near-real time precipitation from the multi-sensor NASA TRMM 3B42 precipitation product to derive flood potential
- Provides an estimate of expected depth of flood inundation at a 0.25 degree resolution (approx. 25 km)
- Precipitation forecast data can be used with the model to provide longer lead time forecasts



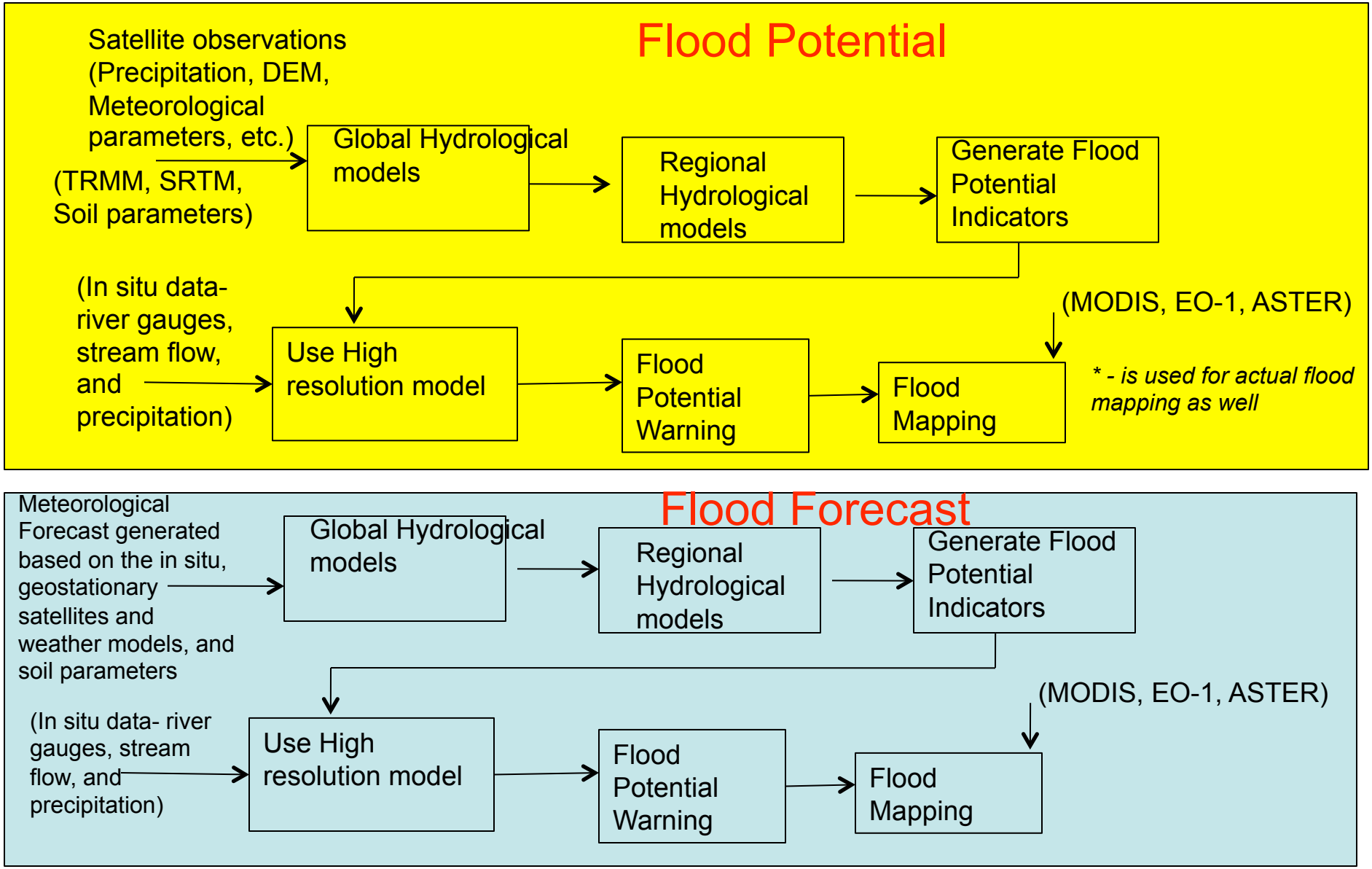
TRMM 3B42 Precipitation

Model



Flood Potential

Overall Concept



Middle East & North Africa (MENA) NASA Land Data Assimilation System (LDAS) for Regional Water Balance Assessments

- **NASA is partnering with USAID to develop a Land Data Assimilation System for the MENA, which will provide regional water balance assessments to address:**
  - **water availability**
  - **water and agriculture variability**
  - **aquifer monitoring**

Recent Highlights:

- **The Arab Water Academy/Abu Dhabi hosted a MENA-LDAS workshop from 25-27th October, 2009 to educate potential users of the system.**
- **World Bank has approved a Global Environment Fund (GEF) Regional Grant under the *Mediterranean Sustainable Development Program* to extend the MENA LDAS to multiple regionally- focused LDAS based water data platforms strategically located through the MENA.**
  - **Negotiations are underway to engage NASA and USAID in this process**

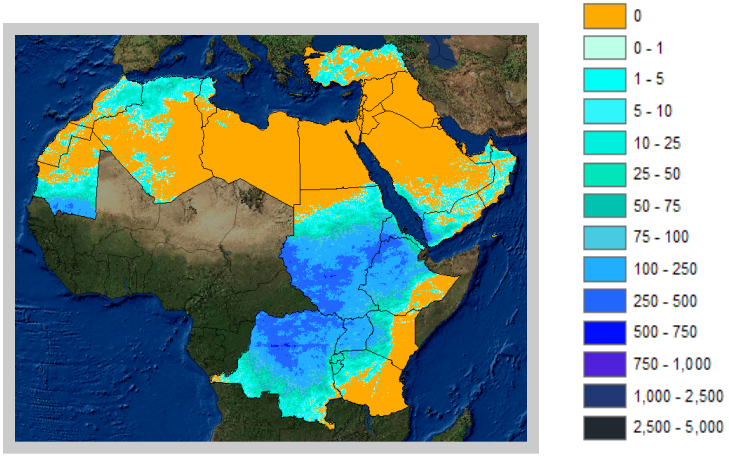


Figure 1. Precipitation (mm/month) for July 2007 at 0.04° resolution, from the UC Irvine PERSIANN-GCCS system. Hourly, near-real time data from PERSIANN will be a primary input to the MENA LDAS.

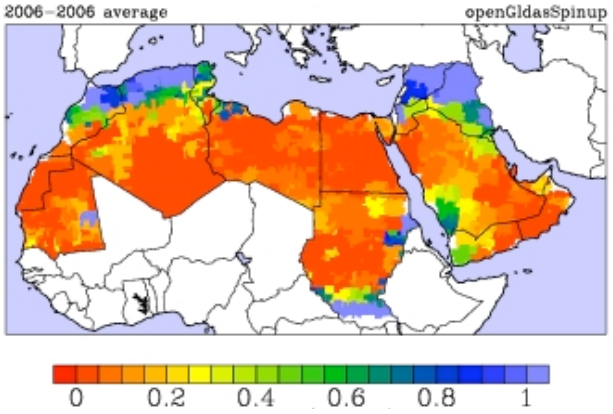


Figure 2. Mean evapotranspiration rate (mm/day) from the MENA LDAS for April, 2006.